WHAT IS CLAIMED IS:

1. A drop ejection device, comprising:

a flow path in which fluid is pressurized for ejecting a drop from a nozzle opening, and

a deaerator including a fluid reservoir region, a vacuum region, and a partition between the fluid reservoir region and the vacuum region,

the partition including a wetting layer and a non-wetting layer and one or more channels extending through the wetting and non-wetting layers, wherein the wetting layer is exposed to the fluid reservoir region.

2. The device of claim 1, wherein the one or more channels have a width of about 0.1 micron to about 5 microns.

3. The device of claim 1, wherein the one or more channels are through-holes.

4. The device of claim 1, wherein the flow path and the deaerator are in a silicon material body.

5. The device of claim 1, wherein the wetting layer has a surface energy of about 40 dynes/cm or more as determined according to the dynes test.

6. The device of claim 1, wherein the wetting layer is a silicon material.

7. The device of claim 1, wherein the non-wetting layer has a surface energy of about 25 dynes/cm or less as determined according to the dynes test.

8. The device of claim 1, wherein the non-wetting layer is a polymer.

9. The device of claim 8, wherein the polymer is a fluoropolymer.

10. The device of claim 1, wherein the non-wetting layer has a thickness of about 2 microns or less.

11. The device of claim 1, wherein the wetting layer has a thickness of about 25 microns or less.

12. The device of claim 1, including a piezoelectric actuator.

13. The device of claim 1, wherein the nozzle opening has a width of about 200 microns or less.

14. The device of claim 1, wherein the device includes a plurality of fluid paths and a plurality of corresponding deaerators.

15. A drop ejection device, comprising:

a flow path in which fluid is pressurized for ejecting a drop from a nozzle opening, at least a part of the flow path being defined by a silicon material, and

a deaerator, the deaerator including a partition having at least one aperture between a fluid reservoir region and a vacuum region, wherein the deaerator includes a silicon material.

16. The drop ejection device of claim 15 wherein the partition includes silicon dioxide.

17. The drop ejection device of claim 15 or 16 wherein the silicon material defining the flow path and the silicon material in the deaerator are in a common body of silicon material.

18. The drop ejection device of claim 17 wherein the common body is an SOI structure.

19. The drop ejection device of claim 17 wherein the flow path includes a pressure chamber.

20. The drop ejection device of claim 15 wherein the partition includes a polymer material.

21. A fluid deaerator portion, comprising:

a first layer having a surface energy of about 40 dynes/cm or more as determined according to the dynes test,

a second layer having a surface energy of about 25 dynes/cm or less as determined according to the dynes test, and

a plurality of channels having a diameter of about 5 microns or less.

22. The partition of claim 21, wherein the first layer is a silicon material.

23. The partition of claim 21, wherein the second layer is a fluoropolymer.

24. A method of drop ejection, comprising:

providing a flow path in which fluid is pressurized for ejecting drops from a nozzle;

prior to pressurizing said fluid, exposing said fluid to a deaerator, the deaerator including a fluid reservoir region, a vacuum region, and a partition between the reservoir region and the vacuum region, wherein the partition includes a wetting layer and a non-wetting layer and one or more channels through the wetting layer and the non-wetting layer;

directing fluid into said reservoir region;

providing a vacuum in said vacuum region that prohibits fluid flow into the vacuum region through said channels.

25. The method of claim 24, wherein a radius of one of the one or more channels is less than a value defined by the following expression:

2(the surface energy of the fluid)
the vacuum pressure.

26. The method of claim 24 wherein the vacuum has a pressure of about 10 to 27 mmHg.

27. A method of forming a deaerator partition, comprising
providing a silicon material;
forming a polymer layer on the silicon material; and
forming one or more channels through the silicon material and polymer layer.

28. The method of claim 27, comprising etching the silicon material to reduce its thickness.

29. The method of claim 27, wherein the silicon material is silicon dioxide.

30. The method of claim 29 comprising
providing a silicon on silicon dioxide structure, and
etching the silicon to the silicon dioxide layer.

31. The method of claims 27 or 30 comprising:
forming said polymer by depositing a polymer or monomer.

32. The method of claim 27, comprising forming said channels by laser drilling.

33. The method of claim 27, comprising forming said channels by etching.

34. A method of forming a printhead, comprising:
providing a body of silicon material,
defining in said body of silicon material at least a portion of a flow path in which fluid is pressurized, and

defining in said body of silicon material at least a portion of a deaerator partition.

35. A deaerator comprising:

a partition having at least one through-hole extending between a fluid reservoir region and a vacuum region,

wherein at least a portion of the at least one through-hole has a non-wetting surface.

36. The deaerator of claim 35, wherein the partition comprises a single layer.

37. The deaerator of claim 35, wherein the partition comprises two or more layers.

38. The deaerator of claim 35, wherein a diameter of the at least one through-hole is between about 200 nanometers and about 800 nanometers.

39. The deaerator of claim 35, wherein a wall defining the at least one through-hole has a microstructured surface.